

Comments on the Noise Impact of the Proposed Millennium Bulk Terminals

Longview, Washington

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My name is Dr. Alice Suter. I am a retired audiologist living at 1106 NE Tillamook St., Portland, Oregon, 97212. My specialty for many years has been the effects of noise on people. I have worked as a Senior Scientist at the U.S. Environmental Protection Agency's (EPA) Office of Noise Abatement and Control, and as Manager of the Noise Standard at the Occupational Safety and Health Administration in the U.S. Department of Labor. Later I was a Visiting Scientist and Research Audiologist at the National Institute for Occupational Safety and Health in the Department of Health and Human Services. I have also worked for many years as an environmental and occupational noise consultant, advising companies, municipalities, and government agencies about their noise problems. My complete resume is available on request.

I have reviewed Chapter 5, the sections concerning the noise impact of the Draft SEPA Environmental Impact Statement (EIS) for the proposed Millennium Bulk Terminals at Longview, Washington. It is my opinion that the noise impact on the nearby community would be extremely serious, considerably more serious than the draft EIS concludes.

On page 5.5-25, the draft EIS estimates that the noise impacts from trains on some 229 residences would be moderate and on 60 homes would be severe. First, the method by which the noise impacts are estimated is incomplete and biased away from the public health and welfare impact. One should also keep in mind that the number of people impacted would considerably exceed the number of homes. Most importantly, on examining the noise map in Figure 5.5-7c and comparing it to the existing noise contours in figure 5.5-5c, it is clear that large portions of the city would be adversely impacted, greatly exceeding the estimates made in the draft EIS. I will explain the reasons for my opinion in the paragraphs to follow.

1. Use of Energy Averages

The criteria to measure the impact of noise on the citizens of the surrounding community has been expressed by the company's consultant as L_{dn} , for which the current terminology is Day-Night Sound Level (abbreviated DNL). The DNL is a cumulative level that averages sound levels over a 24-hour period, using a 10 dB penalty for night-time noise. Its best use is to compare the impact of different noise scenarios and noise reduction methods with one another.

Although the DNL is commonly used to assess the impact of various noise sources, particularly aircraft noise, it has been widely criticized for several decades. A more conservative metric is widely used in Europe - the DENL, which provides an additional penalty for the evening hours between 5:00 and 8:00 pm, a time period that is important for rest and relaxation.

The principle criticism of DNL is that it does not give adequate importance to single or discrete events. Studies have shown that DNL accounts for only a limited amount of the variance between noise sources and their impact on exposed communities. Even the Federal Aviation Administration (FAA), a long-time supporter of DNL, has recommended supplementing the DNL with other metrics to assist the public's understanding of the noise impact (FAA, 2006). Other metrics described in a recent report by the National Academy of Engineering (NAE) include the L_{Amax} , the A-weighted sound exposure level (ASEL), and metrics that give the number of loud events occurring above an average, such as the ASEL (NAE, 2010).

In this draft EIS, averaging noise levels fails to take into account the effect of individual events, with locomotive horns and train pass-bys being perfect examples. The effects of these events should be assessed by one of the metrics recommended by the FAA or NAE in the paragraph above to better understand the full impact. Although it is convenient to express criteria in terms of averages, people do not experience noise as averages — they experience noise as events.

2. Use of DNL for Transportation Planning

Anyone making policy decisions on the basis of this kind of EIS must bear in mind that the missions of agencies such as the Federal Transit Administration (FTA)

and the Federal Railroad Administration (FRA) are to foster the use and health of the transportation industry, and their impact statements necessarily reflect that bias. These agencies are not public health agencies like the EPA and the Department of Health and Human Services (DHHS). The “community impact” that they measure is not in health but in behavior in terms of community reaction.

The FTA report from which the models in this EIS are derived grades community reaction according to the excess of a new noise level above the pre-existing noise level. It describes this process as proceeding from “no reaction, although noise is generally noticeable” to “sporadic complaints” at a few decibels above the pre-existing level, through “widespread complaints or single threat of legal action” at 5-10 dB above pre-existing level, to “several threats of legal action or strong appeals to local officials to stop noise” at 10 to 15 dB above the pre-existing level (FTA, 2006, p. 2-14). The report also makes the caveat that although their criteria have been documented in scientific literature, they “do not account for specific attitudinal factors which may exist.” These types of community responses are then related to DNL as a function of the percentage of people “highly annoyed” by noise.

2. Noise Impact Criteria

Probably the most important argument against current usage of DNL criteria is that this metric is based on community surveys showing only the percentage of people describing themselves as “highly annoyed” by noise, as in the categories listed on page 5.5-10. This criterion assumes that people who are *somewhat* annoyed are not to be counted, but adverse reactions, including the psychological and physiological effects of noise may occur considerably before the point at which individuals describe themselves as “highly annoyed.” In all probability, the reason why this criterion is often used is because the “highly annoyed” residents are the ones most likely to complain and initiate lawsuits, even though the others are still adversely affected.

In my opinion, the FTA/FRA guidance, shown in Figure 5.5-4 does not adequately describe community response. While it is true that people who are already exposed to high levels of noise in their environment are expected to tolerate smaller increases in noise, in part because of the logarithmic nature of the decibel, it is also true that com-

munities accustomed to a relatively peaceful and quiet environment may be seriously impacted by changes in their environment, which the FTA's report acknowledges (FTA, 2006, Fig. 2-14). These are communities that vigorously oppose the citing of racetracks or new or expanded airports in their established communities, actions that may have occurred despite community opposition. On page 5.5-27, the draft EIS alludes to this point by stating that in areas where existing noise levels are low, "there is a greater likelihood that increased train traffic would result in more noticeable noise...." on BNSF main line routes.

Citizens who are either fearful or have a negative impression of the new noise source may be much more disturbed than the planners anticipate, as in the "specific attitudinal factors" cited in the FTA report mentioned above (FTA, 2006). This is quite likely to happen in a community where individuals feel threatened by the health and safety impacts of daily exposure to hazardous materials as miles of uncovered coal cars run through their community.

3. The Human Element

It has always been clear that there is a great deal of scatter in the data points comprising the "noise annoyance" criteria, decreasing the predictive power of these kinds of impact statements. But also, the reactions of community members to noise should not be viewed merely as data points but as psychological and physiological effects on individual residents. These are humans, not just houses.

Throughout this draft EIS, the human element is played down. On page 5.5-10, the draft EIS defines **no impact** as a "change in noise level that would result in an insignificant increase in the number of instances where people are highly annoyed by new noise." Here again this criterion ignores all the people who are disturbed, but not categorized as "highly annoyed." The definition of **moderate impact** as a change in the noise level that would be noticeable to most people "but may not be enough to cause strong adverse community reactions" provides a window into the motivation of those who commission these kinds of impact statements. In other words, you can cause distress to a community up to a point, but "adverse community reactions" (i.e. lawsuits) should be avoided. **Severe impact**, causing a significant percentage of the people to

be highly annoyed by noise, is acknowledged to produce adverse community reaction. By admitting that the residents of at least 60 homes would experience a severe impact, the draft EIS is opening the door to concerted community reaction. Too often this reaction is directed toward local officials rather than the original noise source, since the noise source has already been approved.

However, the estimates of 60 severely-impacted or 229 moderately-impacted homes reflect the tip of the iceberg because both of these noise impacts have been grossly underestimated.

4. Noise Contours

Despite its reliance on the FTA's projected noise impact guidelines in Fig. 5.5-4, Millennium's consultant has also drawn noise contours reflecting the "before" and "after" scenarios resulting from the increase of 16 coal trains per day. These contours include DNLs from 55 dB to 75 dB in 5-dB increments. Interestingly, Figure 5.5-8, which shows the areas severely and moderately impacted by noise have omitted these contours. However, by comparing Figures 5.5-5c and 5.5-7c, it is obvious that all of these contours have shifted significantly in the proposed noise conditions. The importance of this shift cannot be overstated. The 55 DNL contour, which currently includes only a small section in the southern part of the City, is proposed to include a large swath of residential area extending along 32nd Avenue and Alabama St., up to and north of Beech St., nearly as far as Tennant Way. The draft EIS makes no mention of the number of houses included in this contour, but there must be several hundred or more, with residents numbering into the thousands.

A DNL of 55 dB has been identified by the U.S. Environmental Protection Agency as the level requisite to protect the public health and welfare from the harmful effects of noise (EPA, 1974). This is the noise level that *should* be used to assess the impact of noise on communities. Every resident south of this contour as far as the area of the tracks would be living in a noise level exceeding the EPA's identified safe level.

As the noise contours proceed toward the source from DNLs of 55 to 60 and 65 dB, the effects of noise will be increasingly serious. It appears that the area categorized

in the draft EIS as severely impacted will be subject to DNLs of 70 dB or greater, as if they were living under the flight path of an airport.

The FTA/FRA method of analysis clearly ignores the whole concept of public health and welfare, basing its method instead on the likelihood of citizens being angry enough to sue.

4. Health and Psychological Impact

People living in areas above the 55 dB DNL will be interrupted in their enjoyment of conversation and TV, they will be awakened at night, and their stress levels will be increased. They will be more susceptible to cardiovascular disorders and other stress related illnesses.

It is well known that noise can disturb sleep patterns even without awakening, and sleep quality is important to one's mental and physical health. The World Health Organization has put forward recommendations for nighttime noise levels outside sleeping quarters, in other words before the attenuation of windows is considered (WHO, 2009). Average levels less than 30 dBA should prevent any effects. Between 30-40 dBA some disturbances will occur, between 40-55 dBA adverse effects will occur with many individuals, and above 55 dBA, a sizable proportion of the population will be highly annoyed, their sleep will be disturbed, and the risk of cardiovascular disease increases. The WHO recommended noise levels are considerably below the levels identified as "moderate" or "sever" in the draft EIS, either by its FTA method or simply using the noise contours.

There is an extensive literature on the various extra-auditory (non-hearing loss) effects of noise on individuals and communities, including sleep disruption, communication and activity interference, and the psychological, physiological, and performance effects. These studies are too numerous to mention here, but references could be made available upon request.

5. Potential Mitigation

There are several areas within the mitigation discussion that are vague or undetermined.

First, there is no assurance that rail noise mitigation would occur. It is clear that the burden of application for Quiet Zone approval rests with the community. Although the company has pledged assistance in the preparation of the application, there is no guarantee that the application would be approved. While the draft EIS states that the “Applicant [Millennium] will fund all improvements,” the company’s website states only that the Industrial Way and Oregon Way crossings will be funded. Who will fund the other 6 at-grade crossings? What will be the noise impact of making these changes and leaving the others unimproved? Such promises of funding should not be considered a guarantee, especially in view of the condition of the coal extraction industry in today’s economic environment.

On page 5.5-30, the draft EIS states that “it is not known at this time whether terminal design would prevent noise levels from exceeding the applicable standard at all noise-sensitive receptors.” Given the fact that the number of “noise-sensitive receptors” is grossly underestimated, this statement becomes even more vague.

6. Not Included in the Analysis

The draft EIS makes no mention of the adverse physiological and psychological effects of noise on the exposed community, even for those residents considered severely or moderately impacted. It is impossible to accurately assess the community impact without the prediction of these effects.

Neither is there any mention of the effects of noise from the construction project on the workers themselves, who will be exposed to various sources, such as compressors, pneumatic tools, and train sources. Will Millennium have a hearing conservation program? Will that program meet the requirements of Washington’s state plan for OSHA? Will the railroad workers be provided with sufficient protection from the extensive durations of high-level noise emitted by the horn?

Summary

On several counts this draft Environmental Impact Statement is inadequate to predict the impact of noise on the citizens of Longview should the Millennium Bulk Terminals project be approved. The FTA/FRA method of analysis is much too permissive

and is not consistent with the true impact on the health and welfare of the citizens of Longview. This analysis clearly shows that the concerns of the FTA and the FRA are to foster the health of the transportation industry rather than the health of the public. The practice of using noise averages without supplementing them with some kind of single event descriptor confuses the public and underestimates the impact. Stating the impact only in terms of percentage of the community predicted to be “highly annoyed” leaves out all of those who experience aversion to the noise but do not express themselves by vigorous community reaction or lawsuits. By failing to apply the noise contours to the analysis, particularly the contour of the EPA’s identified DNL of 55 dB, the draft EIS leaves out a large swath of the city and its residents who are expected to be impacted. The analysis makes no mention of the most important noise impacts, which are those causing psychological and physiological effects. Finally, questions around financing noise mitigation are unresolved. In the end, it is the City of Longview and its citizens that would bear the health and financial burdens, and most likely the complaints and lawsuits resulting from this extremely noisy proposal.

A revised version of the EIS, if prepared properly, would only show these adverse effects to be even more serious.

References

EPA (1974). Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare With an Adequate Margin of Safety. U.S. Environmental Protection Agency, Washington, DC.

FAA (2006). Order 1050.1E, Chg 1. Section 14.5, Supplemental Noise Analysis. U.S. Department of Transportation, Federal Aviation Administration, National Policy. Washington, DC.

FTA (2006). Federal Transit Administration. Transit Noise and Vibration Impact Assessment. Report #299600 by C.E. Hanson, D.A. Towers, and L.D. Meister, Harris Miller Miller & Hanson, Inc. Available from the National Technical Information Service, Springfield, VA.

NAE (2010). *Technology for a Quieter America*. National Academy of Engineering. National Academies Press, Washington, DC.

WHO (2009). Night Noise Guidelines for Europe. World Health Organization, Copenhagen, DK.